# **Statement of Basis Title V Air Quality Permit Modification American Colloid Company** Belle Fourche, South Dakota

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APPENDIX A – PERMIT MODIFICATION

#### 1.0 BACKGROUND

On June 14, 2000, the South Dakota Department of Environment and Natural Resources (DENR) issued a Title V air quality permit to American Colloid Company (American Colloid) for its bentonite clay processing plant near Belle Fourche, South Dakota. The potential uncontrolled emissions of PM10 for American Colloid's existing equipment were greater than the major source threshold under the Prevention of Significant Deterioration (PSD) program. Based on the age of the facility, DENR determined that American Colloid was grandfathered by the Prevention of Significant Deterioration program for the existing equipment. However, any changes to the existing equipment would need to be reviewed under the Prevention of Significant Deterioration program to determine if it is considered a major modification requiring a Prevention of Significant Deterioration permit.

On March 15, 2001, the Title V air quality permit was revised by removing operational limits on BH-02 and minor description changes to the permitted equipment. The operational limits on BH-02 were removed because American Colloid had satisfied the requirements in the permit for removing the operational limits. The existing permit identified this revision as a minor permit amendment.

On May 14, 2001, the permit was modified to incorporate periodic visible emission readings on each baghouse and a monitoring log to track preventive maintenance on each baghouse and periodic visible emission readings.

On April 21, 2003, the permit was revised to remove operational limits on BH-01. The operational limits on BH-01 were removed because American Colloid had satisfied the requirements in the permit for removing the operational limits. The existing permit identified this revision as a minor permit amendment.

On May 17, 2006, the permit was renewed. The renewed permit required enforceable operational restrictions that would maintain the entire facility's actual emissions below the major source threshold under the Prevention of Significant Deterioration program.

On July 2, 2007, the permit was amended to allow the operation of a fluid bed dryer and associated insignificant units.

On October 9, 2007, the permit was amended to allow the replacement of the #2 Dryer Baghouse (BH-0 1) and the #3 Dryer Baghouse (BH-02).

On March 3, 2008, the permit was modified to revise the short-term nitrogen oxides limit. The application seeks to relax the short-term NOx emission limit for Unit #1.

On August 19, 2008, American Colloid submitted an application, along with additional information on October 13, 2008, to reduce the monitoring requirements to measure the chlorine content of each shipment of coal.

# **1.1** Existing Permitted Units

The permitted equipment in Table 1-1 was derived from the current Title V air quality permit.

Table 1-1 – List of existing permitted equipment

	e 1-1 - Lisi of existing permitted equipme	Maximum	Control
Unit	Description	Operating Rate	Device
#1	BH-01 – Coal mill and #2 rotary dryer (D-2) fired with natural gas and subbituminous coal. A multi clone cyclone containing 36 12-inch tubes is used to collect the dried fine clay for further processing.	Rotary dryer process rate is 40 tons per hour with a heat input rating of 32 million Btus per hour.  The coal mill has a maximum feed rate of 2 tons per hour.	2000 or newer Carter-Day pulse jet baghouse, model #484-RF-12, 484 bags, 14,800 dry standard cubic feet per minute inlet air flow rate.
#2	<b>BH-02</b> - #3 rotary dryer (D-3) fired with natural gas. A multi clone cyclone containing 36 12 inch tubes is used to collect the dried fine clay for further processing.	Process rate is 50 tons per hour with a heat input rating of 40 million Btus per hour.	2000 or newer Carter-Day pulse jet baghouse, model #484-RF-12, 484 bags, 29,000 dry standard cubic feet per minute inlet air flow rate.
#3	<b>BH-06</b> - #4 new Raymond mill (M-4). A cyclone (CY-03) is used to collect the product.	Process rate is 20 tons per hour.	MikroPul pulse jet baghouse, model #100S- 8-20, 100 bags, 3,600 dry standard cubic feet per minute inlet airflow rate.
#4	<b>BH-08</b> – EZ spread tank (T-15) and EZ spread packer (P-5) system.	Process rate is 3 tons per hour.	1981 Kice pulse jet baghouse, model #81S- 10-20, 81 bags, 6,012 dry standard cubic feet per minute inlet airflow rate.
#5	<b>BH-10</b> – Old granular screens 1 through 3 (S-1, S-2, and S-3), Hummer screen (S-4), two Norberg screens (S-5 and S-6), and an aspirator (AS-3).	The old granular screens are rated at 7.5 tons per hour per screen. The Hummer and two Norberg screens are rated at 7 tons per hour per screen. The aspirator is rated at 40 tons per	MikroPul pulse jet baghouse, model #432S- 8-20, 432 bags, 26,562 dry standard cubic feet per minute inlet airflow rate.

		Maximum	Control
Unit	Description	<b>Operating Rate</b>	Device
		hour.	
#6	<b>BH-12</b> – Two MX-80 tanks (T-33 and T-34), #11 enclosed bucket elevator (E-6), and packer surge bin (SB-3).	The MX-80 tanks are rated at 7 tons per hour per tank. The #11 enclosed bucket elevator and packer surge bin are rated at 20 tons per hour each.	Kice pulse jet baghouse, model #36-8, 36 bags, 2,649 dry standard cubic feet per minute inlet airflow rate.
#7	<b>BH-15</b> –universal elevator (E-10) and #40 Elevators (E-16).	Process rate is 40 tons per hour per unit.	1980 MikroPul pulse jet baghouse, model #121S- 8-20, 121 bags, 7,020 dry standard cubic feet per minute inlet airflow rate.
#8	BH-18 – St. Regis 4 spout truck load out (P-1), bulk bag loader (BB-7), Howell elevator (E-4), new packer 3 bindicators (P-2), super col elevator (E-2), three packers (P-4), surge bins (SB-2), and Imp hammer mill (M-6).	The St Regis 4 spout truck load out is rated at 30 tons per hour. The bulk bag loader, Howell elevator, new packer 3 bindicators, and super col elevator are rated at 20 tons per hour each. The packager and surge bin are rated at 2 tons per hour each. The Imp hammer mill is rated at 8 tons per hour.	MikroPul pulse jet baghouse, model #480S- 8, 480 bags, 21,600 dry standard cubic feet per minute inlet air flow rate.
#9	<b>BH-19</b> – P3 granny packer elevator (E-15) and packer (P-3) system.	Process rate is 25 tons per hour.	MikroPul pulse jet baghouse, model #100S- 8-20, 100 bags, 5,859 dry standard cubic feet per minute inlet air flow rate.
#10	BH-23 – ECG bunker (EB-1).	Process rate is 80 tons per hour.	1982 Carborendium pulse jet baghouse, model #225-10-20, 225 bags, 19,499 dry standard cubic feet per minute inlet air flow rate.
#11	<b>BH-24</b> – Railcar loading system (DCL-1) and bulk loading elevator (E-	Process rate for both units is 40 tons per	1982 MikroPul pulse jet baghouse, model #121-8-

		Maximum	Control
Unit	Description	<b>Operating Rate</b>	Device
	24).	hour.	20, 121 bags, 7,020 dry standard cubic feet per minute inlet air flow rate.
#12	BH-43 – #2 and #3 side tank bin vents (T-10 and T-11), center elevator (E-17), #1 elevator (E-14), specialty tank (T-7) and yellow system 9 tank (T-14).	The two side tanks bin vents and center elevator are rated at 40 tons per hour per unit. The #1 elevator is rated at 50 tons per hour. The specialty and yellow system 9 tank are rated at 20 tons per hour per unit.	MikroPul pulse jet baghouse, model #240S- 8, 240 bags, 15,066 dry standard cubic feet per minute inlet air flow rate. Exhaust from #1 elevator may be routed through BV-01.
#13	BH-44 – NS turbo mill (M-8), new system screens 1 and 2 (S-7 and S-8), L elevator (E-12), M elevator (E-8), N elevator (E-9), S elevator (E-7) and three aspirators (AS-2, AS-4, and AS-n) with airflow diverter between AS-2 and N elevator.	The turbo mill is rated at 25 tons per hour. The two screens are rated at 7.5 tons per hour per screen. The four elevators and aspirators are rated at 40 tons per hour per unit.	1985 MikroPul pulse jet baghouse, model #100S- 8-20, 100 bags, 12,575 dry standard cubic feet per minute inlet air flow rate.
#14	<b>BV-01</b> – #1 enclosed bucket elevator bin vent (E-14).	Process rate is 50 tons per hour.	1980 MikroPul pulse jet baghouse, model #36-6, 36 bags, 1,800 dry standard cubic feet per minute inlet air flow rate.
#15	<b>BV-02</b> –#2 dry tank bin vent (T-16).	Process rate is 50 tons per hour.	1982 MikroPul pulse jet baghouse, model #16S-6, 16 bags, 1,080 dry standard cubic feet per minute inlet air flow rate.
#16	<b>BV-03</b> –#3 dry tank bin vent (T-17).	Process rate is 50 tons per hour.	1982 MikroPul pulse jet baghouse, model #16S-6, 16 bags, 630 dry standard cubic feet per minute inlet air flow rate.
#17	<b>BV-06</b> – Short enclosed bucket elevator bin vent (E-18).	Process rate is 20 tons per hour.	1980 MikroPul pulse jet baghouse, model #16-8, 16 bags, 1,800 dry standard cubic feet per minute inlet air flow rate.

		Maximum	Control
Unit	Description	Operating Rate	Device
#18	<b>BV-07</b> – "Big" #3 enclosed bucket elevator bin vent (E-23).	Process rate is 50 tons per hour.	1978 MikroPul pulse jet baghouse, model #48-8, 48 bags, 1,440 dry standard cubic feet per minute inlet air flow rate.
#19	<b>BV-08</b> – #8 enclosed bucket elevator bin vent (E-21).	Process rate is 50 tons per hour.	1978 MikroPul pulse jet baghouse, model #16-6, 16 bags, 1,440 dry standard cubic feet per minute inlet air flow rate.
#20	<b>BV-10</b> –SuperCol Tank bin vent (T-42).	Process rate is 50 tons per hour.	1980 MikroPul pulse jet baghouse, model #16S-6, 16 bags, 630 dry standard cubic feet per minute inlet air flow rate.
#21	<b>BV-11</b> – DCL surge bin vent (SB-7).	Process rate is 40 tons per hour.	1980 MikroPul pulse jet baghouse, model #16S-8, 16 bags, 1,440 dry standard cubic feet per minute inlet air flow rate.
#22a	<b>BV-12</b> – System 9 Tank bin vent (T-8).	Pneumatic transfer rate is 7 tons per hour.	1980 MikroPul pulse jet baghouse (south end), model #36-8, 36 bags, 2,125 dry standard cubic feet per minute inlet air flow rate.
#22b	<b>BV-13</b> – System 9 Tank bin vent (T-9).	Pneumatic transfer rate is 7 tons per hour.	1980 MikroPul pulse jet baghouse (north end), model #36-8, 36 bags, 2,125 dry standard cubic feet per minute inlet air flow rate.
#23	<b>BV-14</b> – Short SG-40 enclosed bucket elevator bin vent (E-22).	Process rate is 30 tons per hour.	1980 MikroPul pulse jet baghouse, model #48-8, 48 bags, 2,250 dry standard cubic feet per minute inlet air flow rate.
#24	<b>BV-16</b> – Reclaim enclosed bucket elevator bin vent (E-20).	Process rate is 80 tons per hour.	1980 MikroPul pulse jet baghouse, model #16-6, 16 bags, 1,080 dry standard cubic feet per

		Maximum	Control
Unit	Description	Operating Rate	Device
			minute inlet air flow rate.
#25	BL-01 – <b>1980 Bethlehem steam boiler</b> fired with natural gas.	Heat input rate is 7.3 million Btus per hour.	Not applicable.
#26	<b>BK-02</b> – Blaw-Knox dryer #2. Steam provided by BL-01	Process rate is 350 pounds per hour	Not applicable.
#27	<b>BK-03</b> – Blaw-Knox dryer #3. Steam provided by BL-01	Process rate is 350 pounds per hour	Not applicable.
#28	WP-01 – 1987 Mikro ACM pulverizer specialty clay micro mill (MM-1) and 1980 Chantland specialty clay packer (BP-1).	Process is 2 tons per hour per unit.	1980 MikroPul pulse jet baghouse, 100 bags, 5,850 dry standard cubic feet per minute inlet air flow rate (Collects product from mill).
#29	WP-05 –1983 agglomerate dryer (VBD-1). The dryer is fired with natural gas.	Process rate is 12 tons per hour; but blender limits the process rate to 2 tons per hour. The heat input rating is 15 million Btus per hour.	1983 MikroPul pulse jet baghouse, 121 bags, 5,005 dry standard cubic feet per minute inlet air flow rate.
#30	<b>BV-05</b> – Packer surge bin vent (SB-5).	Process rate is 25 tons per hour.	1990 MikroPul pulse jet baghouse, model #16-6, 16 bags. Exhaust air emitted indoors.

## 1.2 Proposed Changes

Permit condition 8.4 of the current permit requires the source to determine the chlorine content of each coal shipment either by certification from the fuel supplier or by sampling and analyzing a grab sample of the storage pile. The purpose of this permit condition is to monitor compliance with Permit Condition 6.14 that imposes a limit on hydrogen chloride (HCl) emissions from the permitted equipment to less than or equal to 9.5 tons per 12-month rolling period in order to exempt the source from a case-by-case maximum achievable control technology standard.

The cover letter of the application states that the fuel supplier is unwilling to provide certification of the chlorine content of the coal and goes on to explain that each sample costs around \$100 to have analyzed. Further discussion with Brett Meyer, Environmental Coordinator with American Colloid revealed the company receives coal shipments via truck at a frequency of 2-3 shipments per week. American Colloid originally requested the chlorine-testing requirement be removed from the permit.

This permit review will consider the proposed changes to the monitoring requirements.

#### 2.0 POTENTIAL EMISSIONS

The monitoring requirements were placed in the permit, based on emission calculations that showed the potential hydrogen chloride emissions of the coal fired dryer were 10.5 tons per year. Hydrogen chloride emissions are a result of the chlorine in coal. DENR calculates potential emissions by assuming the unit operates every day of the year at the maximum design capacity. The potential hydrogen chloride emissions were originally calculated in the May 2006 SOB based on and AP-42 emission factor of 1.2 pounds Hydrogen chloride per ton of coal fired and a firing capacity for the dryer of 2 tons per coal per hour as shown in Equation 1.

#### Equation 1 – Subbituminous coal potential emissions

$$Potential\ emissions \left(\frac{tons}{year}\right) = 1.2 \frac{lbs\ HCl}{ton\ coal} \times 2.0 \frac{ton\ coal}{hour} \times 8,760 \frac{hours}{year} \div 2,000 \frac{pounds}{ton}$$

As part of the 2006 renewal permit, American Colloid conducted a stack test on the dryer to determine the hydrogen chloride emission rate. The average (over three 1-hr runs) hydrogen chloride emission rate was 0.232 pounds per hour while burning approximately 1.52 tons of coal per hour (equal to 0.153 pounds hydrogen chloride per ton coal). Based on the emission rate of 0.153 pound hydrogen chloride per ton coal and Equation 1 the potential emissions are 1.3 tons of hydrogen chloride per year.

Unfortunately, the chlorine content of the coal fired during the stack test was not measured. It is also not known what chlorine concentrations or types of coal where used in development of the AP-42 emission factor. DENR reviewed six chlorine contents measured by American Colloid between May and October 2008. All of the measurements except one were less than 0.001 % by weight on a dry basis. The one exceptional measurement was 0.0047 % (0.000047 in decimal form) by weight on a dry basis. The concentration of the chlorine in parts per million of the coal is 47 parts per million calculated by equation 2.

# Equation 2 – Chlorine concentration of the coal

Parts per million =  $(0.000047 \ Cl \ dry)x(1,000,000)$ 

According to the USGS data, Powder River Basin coal typically has the lowest chlorine concentration of any coal in the US at around 0.01 % by weight dry on average. The United States Geological Survey (USGS) maintains a database of the coal quality found in the United States. That database may be located on the internet at <a href="http://energy.er.usgs.gov/coalqual.htm">http://energy.er.usgs.gov/coalqual.htm</a>. DENR reviewed the chlorine content of the coal found in the Powder River Basin in Wyoming. The database indicates 132 samples where chlorine was analyzed. The average chlorine content of this data set was 111 parts per million. 130 of the 132 samples (over 98%) in the data set has a chlorine concentration less than 230 parts per million. The two samples in the data set that note a chlorine concentration greater than 230 parts per million were 1,100 and 1,400 parts per million, respectively.

The potential hydrogen chloride emissions using the USGS database may be calculated using Equation 3.

#### Equation 3 – Subbituminous coal potential emissions

$$Potential\ emissions \left(\frac{tons}{year}\right) = \left(\frac{ppm\ Cl}{1,000,000\ ton\ coal}\right) x \left(\frac{2\ ton\ coal}{hour}\right) x \left(\frac{8,760\ hours}{year}\right)$$

Depending on the concentration used, the average chlorine concentration of 111 parts per million equates to the potential emissions of 1.9 tons of hydrogen chloride per year. Using the chlorine concentration of 230 parts per million, which represents more than 98 percent of the data set, will equate to the potential emissions of 4.0 tons of hydrogen chloride per year. Using the chlorine concentration of 1,400 parts per million, which represents the highest chlorine concentration in the data set, will equate to the potential emissions of 24.5 tons of hydrogen chloride per year.

Based on the stack tested emission rate, the consistency of the low chlorine content currently received, and the low chlorine content of Wyoming coals in general (the closest source of fuel) DENR agrees that monitoring the chlorine content of each truckload of coal may be reduced.

DENR will modify the permit to reduce the frequency of chlorine testing from once per shipment (approximately 3 times a week) to once per month, revise the monthly hydrogen chloride calculation, and add a requirement to measure the hydrogen chloride emission rate and corresponding chlorine content of the coal burned at the next scheduled stack test on the dryer.

DENR recommends the monthly chlorine testing be based on a composite sample. This means a grab sample from each shipment of coal received (2-3 times a week) during the calendar month shall be taken. The monthly grab samples shall be mixed and a grab sample of this mixture shall be taken and analyzed for its chlorine content.

Since the chlorine content of the coal was not determined during the initial hydrogen chloride stack test, DENR recommends the monthly hydrogen chloride emissions be based on two approaches. The first approach is based on using the conservative emission factor of 1.2 pounds hydrogen chloride per ton of coal burned until the recommended performance test has been completed and the results of the performance test have been approved. The second approach is based on using the chlorine content of the coal, which will be verified by the hydrogen chloride performance test.

# 3.0 PERMIT REQUIREMENTS

#### 3.1 New Source Review

The ARSD 74:36:10:01 states that New Source Review (NSR) regulations apply to areas of the state which are designated as nonattainment pursuant to the Clean Air Act for any pollutant regulated under the Clean Air Act. American Colloid is located near Belle Fourche, South Dakota, which is in attainment for all the pollutants regulated under the Clean Air Act. Therefore, American Colloid is not subject to NSR.

### 3.2 Prevention of Significant Deterioration (PSD)

American Colloid's current permit includes operational restrictions and emission limits which maintain actual emissions below the major source threshold under the PSD program. The proposed change will not increase potential emissions above the major source threshold. Therefore, the proposal does not change the minor source PSD status of the facility.

#### 3.3 New Source Performance Standards

DENR reviewed the New Source Performance Standards (NSPS) and determined that the proposed project will not change the applicability of any New Source Performance Standard.

#### 3.4 National Emission Standards for Hazardous Air Pollutants

DENR reviewed the National Emission Standards for Hazardous Air Pollutants (NESHAP) in 40 CFR Part 61 and determined that there are no NESHAP standards applicable to the proposed change.

### 3.5 Maximum Achievable Control Technology Standards

The current permit includes operational restrictions and emission limits which maintain actual HAP emissions below the major source threshold. The proposed changes will not affect those limits or the facility's applicability to any MACT standard.

DENR reviewed the conditions to make sure that the operational restrictions and emissions limits were still enforceable in a practical matter. The current permit (permit condition 6.14) requires the source to maintain emissions less than 9.5 tons per 12-month rolling period. The current permit (permit conditions 5.5 and 5.8) requires the source to calculate hydrogen chloride emissions on a monthly basis and submit the results of those calculations to DENR on a quarterly basis. The calculations of the hydrogen sulfide were to be based on performance testing requirements in Chapter 7.0. The conditions are permanent, contain a legal obligation for the source to adhere to the terms and conditions, are technically accurate and quantifiable, identify an averaging time that allows at least monthly checks, and required a level of recordkeeping, reporting, and monitoring sufficient to demonstrate compliance with the limit. Therefore, the permit conditions are still considered enforceable in a practical matter.

Based on the variability in the hydrogen chloride over the course of the 3-hour stack testing and the fact that the chlorine content of the coal fired during the last performance test is unknown, DENR will revise permit condition 5.5 to specify the calculation method associated with the revised monitoring frequency.

#### 3.6 State Requirements

Revisions to Title V air quality permit that meet the requirements of the ARSD 74:36:05:35 are required to follow the procedural requirements for minor permit amendments. A significant change to existing monitoring, reporting, or record keeping requirements in the permit, do not qualify as a minor amendment and are required to go through a permit modification process.

The proposal is reducing the frequency of the testing of the chlorine content. In 2006, a petition was submitted to EPA to object to the issuance of American Colloid's Title V permit that was renewed in calendar year 2006. In that petition, the monitoring of hydrogen chloride emissions was discussed. DENR considers this proposal a permit modification and not a minor permit amendment.

#### 3.6-1 Emission Limits

The proposal does not require changes to South Dakota's opacity, particulate matter, and sulfur dioxide limits identified in ARSD 74:36:06 and ARSD 74:36:12.

#### 3.6-2 Performance Tests

American Colloid's permit requires annual stack testing for three consecutive years to determine compliance with the nitrogen oxide emission limit in the permit.

DENR will add a requirement for American Colloid to also test the hydrogen chloride emission rate and the chlorine content of the coal burned during the test in order to establish a correlation between the hydrogen chloride emission rate and the chlorine content of the coal burned.

#### 3.6-3 Summary of Applicable Requirements

Any source operating in South Dakota that meets the requirements of the Administrative Rules of South Dakota (ARSD) 74:36:05:03 is required to obtain a Title V air quality permit. A major source is defined as having the potential to emit greater than 100 tons per year of a criteria pollutant or greater than or equal to 10 tons per year of a single hazardous air pollutant, or greater than or equal to 25 tons per year of a combination of hazardous air pollutants. A source that is required to comply with federal new source performance standards or national emission standards for hazardous air pollutants must obtain a Title V air quality permit. American Colloid is a major source and is subject to federal new source performance standards. The proposed revision does not change the requirement for American Colloid to obtain a Title V permit.

The following regulations apply to the proposed project:

- ARSD 74:36:05 Operating Permits for Part 70 Sources; and
- ARSD 74:36:11 Performance Testing.

#### 4.0 RECOMMENDATION

DENR considers American Colloid's proposed change to the monitoring requirements a permit modification. The changes to the permit may be observed in Appendix A. Any questions pertaining to this permit recommendation should be directed to Jim A. Anderson, Natural Resources Project Engineer.

# Appendix A Permit Modification

#### PERMIT MODIFICATION

## Changing the monitoring requirements for the chlorine contents of coal

The following changes to the existing permit represent changes that meet the definition of a permit modification. Additions to the existing permit are represented in bold, blue, and underlined, while deletions are represented in red with overstrikes. In the case where permit conditions are deleted or added between permit conditions, the permit conditions will be renumbered appropriately when the permit is issued.

#### 1.0 STANDARD CONDITIONS

1.1 Operation of source. In accordance with Administrative Rules of South Dakota (ARSD) 74:36:05:16.01(8), the owner or operator shall operate the units, controls, and processes as described in Table #1 in accordance with the statements, representations, and supporting data contained in the complete permit application submitted and dated January 4, 2006, April 23, 2007, July 18, 2007, October 30, 2007, December 03, 2007, August 19, 2008 unless modified by the conditions of this permit. The application consists of the application forms, supporting data, and supplementary correspondence. If the owner or operator becomes aware that it failed to submit any relevant facts in a permit application or submitted incorrect information in an application, such information shall be promptly submitted.

## 5.0 RECORD KEEPING AND REPORTING REQUIREMENTS

- **5.5 Monthly records**. In accordance with ARSD 74:36:05:16.01(9), the owner or operator shall calculate and record the following amounts each month:
- 1. The amount of particulate matter less than or equal to 10 microns in diameter (PM10), in tons, emitted into the ambient air from the permitted units during the month. A 12-month rolling total shall be calculated every month using that month's value and the previous 11 months' values. The amount of PM10 emitted to the ambient air from permitted units shall be calculated using the most recent performance test that demonstrates compliance with the appropriate particulate matter emission limit, emission factors from the statement of basis, or other methods as approved by the Secretary;
- 2. The amount of sulfur dioxide, in tons, emitted into the ambient air from the permitted units during the month. A 12-month rolling total shall be calculated every month using that month's value and the previous 11 months' values. The amount of sulfur dioxide emitted to the ambient air from permitted units shall be calculated using the most recent performance test that demonstrates compliance with the appropriate sulfur dioxide emission limit, emission factors from the statement of basis, or other methods as approved by the Secretary;
- 3. The amount of nitrogen oxide, in tons, emitted into the ambient air from the permitted units during the month. A 12-month rolling total shall be calculated every month using that month's value and the previous 11 months' values. The amount of nitrogen oxide emitted to

- the ambient air from permitted units shall be calculated using the most recent performance test that demonstrates compliance with the appropriate nitrogen oxide emission limit, emission factors from the statement of basis, or other methods as approved by the Secretary;
- 4. The amount of carbon monoxide, in tons, emitted into the ambient air from the permitted units during the month. A 12-month rolling total shall be calculated every month using that month's value and the previous 11 months' values. The amount of carbon monoxide emitted to the ambient air from permitted units shall be calculated using the most recent performance test, emission factors from the statement of basis, or other methods as approved by the Secretary; and
- 5. The amount of hydrogen chloride, in tons, emitted into the ambient air from the permitted units during the month. A 12-month rolling total shall be calculated every month using that month's value and the previous 11 months' values. The monthly amount of hydrogen chloride emitted to the ambient air from permitted units shall be calculated as identified in permit condition 8.4.

#### 7.0 PERFORMANCE TESTS

**7.7 Particulate matter performance tests.** In accordance with ARSD 74:36:11:02, the owner or operator shall conduct a stack performance test on Units #1 (BH-01), #2 (BH-02), #4 (BH-08), #5 (BH-10), #6 (BH-12), #8 (BH-18), #9 (BH-19), #10 (BH-23), #12 (BH-43), #13 (BH-44) and #19 (BV-08). The stack performance test shall be conducted to determine particulate less than or equal to 10 microns in diameter (PM10) emission rates and demonstrate compliance with permit condition 6.6. The performance test shall be conducted while Unit #1 is fired solely with natural gas. A stack performance test on Unit #1, #2, #4, and #13 shall be conducted within 60 days of permit issuance. A stack performance test on Unit #5, #6, #8, and #9 shall be conducted within 365 days of permit issuance. A stack performance test on Unit #10, #12, and #19 shall be conducted within 730 days of permit issuance.

The particulate performance test shall determine both the total suspended particulate and PM10 emission rates. The owner or operator may use the total suspended particulate performance test results as the result for the PM10 performance test if the total suspended particulate test demonstrates compliance with PM10 emissions limits.

The issued date referred to in this permit condition was the renewal permit issue date of May 17, 2006.

**7.8** Additional performance tests on Unit #1 and #2. In accordance with ARSD 74:36:11:02, the owner or operator shall conduct a carbon monoxide performance test on Unit #1 (BH-01) and #2 (BH-02) within 60 days of permit issuance. The performance test shall be conducted while BH-01 and BH-02 are fired solely with natural gas.

The issued date referred to in this permit condition was the renewal permit issue date of May 17, 2006.

7.11 2009 performance tests on Unit #1 while burning subbituminous coal. In accordance with ARSD 74:36:11:02, the owner or operator shall conduct a performance tests on Unit #1 (Dryer 2) prior to December 31, 2009. The performance tests shall be conducted while Unit #1 is fired with subbituminous coal. The performance test shall determine the hydrogen chloride emission rate. The coal firing rate shall be monitored and recorded during each of three test runs. A grab sample shall be taken of the coal being fired during each performance test runs and analyzed to determine its chlorine content. The hydrogen chloride testing may occur at the regularly scheduled 2009 performance test required by Permit Condition 7.9.

#### 8.0 MONITORING

- **8.4** Monitoring sulfur and chlorine content of subbituminous coal. In accordance with ARSD 74:36:05:16.01(9), the owner or operator shall obtain a fuel supplier certification for each shipment of subbituminous coal purchased or received. The fuel supplier certification shall include the name of the fuel supplier and the sulfur content in the subbituminous coal in percent sulfur by weight. following information:
- 1. The name of the fuel supplier;
- 2. The sulfur content in the subbituminous coal, in percent sulfur by weight; and
- 3. The chlorine content in the subbituminous coal, in percent chlorine by weight.

In the case where a fuel supplier certification is not obtained, the owner or operator shall collect a grab sample from the subbituminous coal storage pile prior to burning the subbituminous coal. The grab sample shall be analyzed to determine the sulfur and chlorine content of the subbituminous coal.

8.4 Monitoring hydrogen chloride and chlorine content of subbituminous coal. In accordance with ARSD 74:36:05:16.01(9), the owner or operator shall collect a grab sample from the subbituminous coal storage pile once per calendar month. The grab sample shall be analyzed to determine the chlorine content of the subbituminous coal in percent chlorine by weight.

In lieu of sampling, the owner or operator may obtain a fuel supplier certification for each shipment of subbituminous coal purchased or received. The fuel supplier certification shall include the name of the fuel supplier and the chlorine content in the subbituminous coal in percent chlorine by weight.

The hydrogen chloride emissions shall be calculated each month based on equations 8-1 or 8-2. The owner or operator shall initially use equation 8.1 until the performance test in condition 7.11 has been completed. Once the performance test has been completed and the Secretary approves the results of the performance test, the owner or operator shall use equation 8-2.

**Equation 8-1** 

Monthly Emissions = 
$$\left(\frac{1.2 \ pounds}{tons \ coal}\right) x (Coal \ Usage) \div \left(\frac{2000 \ pounds}{ton}\right)$$

Where: Monthly Emissions = the monthly hydrogen chloride emissions in tons

Coal Usage = the amount of subbituminous coal burned in Unit #1 during the calendar month.

## **Equation 8-2**

 $Monthly\ Emissions = (Chlorine\ Content)x(Coal\ Usage)$ 

Where: Monthly Emissions = the monthly hydrogen chloride emissions in tons

Chlorine Content = the percent chlorine by weight determined for the monthly grab

sample in its decimal form

<u>Coal Usage = the amount of subbituminous coal burned in Unit #1 during the calendar month.</u>